

CC: Abdominal pain and hyperglycemia

Updated: 02/9/2013

# Diabetic Ketoacidosis

Orders: All patients with pre-gestational DM should have a fetal growth ultrasound every 4-6 weeks, unless indicated earlier.

Diagnosis	Orders
<b>Diabetic Ketoacidosis</b>	<input type="checkbox"/> Admit to ICU / L&D <input type="checkbox"/> Blood glucose and urine dipstick q hour <input type="checkbox"/> Strict I&O <input type="checkbox"/> CEFM / FHR q shift <input type="checkbox"/> NS 1000 ml / h x 1 hour then NS at ____ ml/h (500-1000ml) for ____ h (2-4h) then NS at 250 ml/h <input type="checkbox"/> D5NS when plasma glucose < 250 mg/dL <input type="checkbox"/> Start Insulin drip (see next page) <input type="checkbox"/> Repeat serum chem 7, ketones every ____ hours until anion gap and ketones normal <input type="checkbox"/> If serum potassium is less than 3.3 mEq/L then give KCL piggyback TRA 40 mEq/h. (Reduce rate by 50% if patient is oliguric.) <input type="checkbox"/> If Serum potassium is greater than or equal to 3.5 mEq/L and less than 5 mEq/L then 20 mEq/h . (Reduce rate by 50% if patient is oliguric.) <input type="checkbox"/> Hold potassium if potassium is greater than 5 mEq/L <input type="checkbox"/> Add bicarbonate one ampule (44 mEq) to 1 L of 0.45 normal saline if pH is <7.1 <input type="checkbox"/> Tylenol 500 mg 1-2 PO Q 4-6 hr PRN pain/T > 101°F. <input type="checkbox"/> DVT prophylaxis with Heparin 5000 U SQ bid <input type="checkbox"/> OB Sono: size / dates / anomalies

- Treatment goal is to reduce blood glucose by ~ 100 mg /dl per hour (5 to 6 mmol/L per ) per hour
- Continue infusion 12–24 hours after resolution of ketosis
- If mom is acidotic, so is baby. Correct fetal heart rate pattern anomalies by stabilizing and correcting the maternal acidosis.
- Consider repeat ABG to confirm resolution of acidosis
- Continue IV insulin for 90 minutes after 1<sup>st</sup> dose of NPH or Lantus/Levemir given

## History:

- Class B – R DM
- Typical clinical presentation of diabetic ketoacidosis in pregnancy includes abdominal pain, nausea and vomiting, and altered sensorium

## Initial orders:

- Chem 7, Ca, Mag, Phos
- Accucheck (levels <200 reported in pregnancy, typically >300)
- ABG
- Serum beta-hydroxybutyrate
- UA with C&S , Blood C&S
- Consider amylase/lipase if abdominal pain
- EKG

## Notes:

- DKA carries a 10% or higher chance of fetal loss.
- Remember to do DM workup if the patient hasn't completed it already: HgA1C, TSH, Chem 7, EKG, 24 hour urine protein and creatinine clearance, OB sono-r/o anomalies, Opthamology-r/o retinopathy.
- an Hb A1C concentration near 10% is associated with a fetal anomaly rate of 20–25%

**ARROWHEAD REGIONAL MEDICAL CENTER**

**Modified Adult ICU Insulin Infusion Orders**

1. Discontinue all oral hypoglycemic agents, Discontinue all previous insulin orders
2. Monitor finger stick blood glucose every 1 hr. until within target range for four consecutive readings, then decrease to every 2 hours.
3. Labs: Serum Electrolytes, BUN, Creatinine, Glucose, Magnesium, Phosphorus STAT, then daily while on insulin infusion.  
Serum Potassium every 4 hours while on insulin infusion until 3 consecutive normal range values (3.5 to 5.0 mEq/ml), then change to q24 hours
4. **INSULIN INFUSION:** 150 units Regular Insulin in 150 ml 0.9% NaCl (1 unit/1 ml)  
Administer via infusion pump.  
**Prime:** Before infusion begins, flush and discard 20 ml of insulin/NaCl IV solution through tubing to ensure it is fully coated with insulin.  
Change insulin infusion bag every 24 hours. When changing IV tubing every 72 hours, disconnect infusion from patient, flush and discard 20ml of insulin/NaCl solution to ensure all tubing is coated with insulin. Then re-start infusion.  
Check intravenous blood return to make sure catheter is not infiltrated if patient **NOT** responding to insulin drip
5.  Give **5 units Regular Insulin bolus (if checked)** and start Insulin infusion at: (see column selection below)

**Maintenance of Insulin Infusion (Target Blood Glucose Range: 100-160 mg/dl)**

**Follow directions below (every hour) to determine the appropriate column to select infusion rate (units/ hr)**

Column 1 Start here

- If blood glucose decreased by less than 60 mg/dl in one hour, **move TO THE RIGHT** one column
- If blood glucose decreased by more than 100 mg/dl in one hour, **move TO THE LEFT** one column
- If blood glucose is within range (100-160 mg/dl) but has decreased by more than 100 mg/dl in the past hour, **move TO THE LEFT** one column. If in Column 1 already, decrease the rate by moving **UP** two rows.

Glucose mg/dl	<b>Column 1</b>	<b>Column 2</b>	<b>Column 3</b>	<b>Column 4</b>
Less than 100	Drip Off	Drip Off	Drip Off	Drip Off
101-120	0.5	1	1.5	3
121-150	1	2	3	5
151-180	1.5	3	5	7
181-210	2	4	7	9
211-240	2.5	5	9	12
241-280	3	6	11	16
281-350	4	8	15	20
Greater than 350	6	12	16	24
<p>■ <b>If the blood glucose is above 180 mg/dl for 3 consecutive hours while in Column 4 and at maximal infusion rate, call physician.</b></p>				

**For Blood Glucose Values less than 70mg/dl**

If blood glucose **less than 70 mg/dl:**

1. Stop insulin infusion and get stat serum glucose
2. Give 25 ml of D50W IV push
3. Recheck blood glucose in 15 minutes and repeat 25 ml D50W if blood glucose is less than 70 mg/dL
4. Call MD if blood glucose is less than 70 mg/dL
5. Check blood glucose every 15 minutes until glucose is 95 mg/dL or over, then:
6. Restart insulin infusion: Move to column below previous level and infuse per blood glucose result

Reference: American Diabetes Association: Clinical Practice Recommendations. *Diabetes Care, January 2008, Volume 31, Supplement 1*